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Co/Pd and Co/Pt multilayers have been fabricated on ultra-thin (2 nm) indium tin oxide (ITO) seed layers with soft underlayer for perpendicular magnetic recording. The coercivity of the Co/Pd multilayers was increased from 5.1 kOe to 6.3 kOe by increasing the thickness of the initial Pd layer from 1 nm to 2 nm. Hysteresis loops with an almost perfect remanent squareness, high nucleation field, and more sheared sides were obtained. TEM analysis shows that the films have well-segregated columnar structures which help to reduce exchange coupling and increase coercivity. Spin-stand testing shows that the Co/Pd multilayers have a D50 about 157 kfci without differentiating the output signals. Co/Pt multilayers with ITO seed layers deposited in 40 mTorr of Kr give a coercivity of 6.9 kOe and a D50 about 290 kfci when the output signal is differentiated

Index Terms:

cobalt coercive force exchange interactions (electron) iron alloys magnetic hysteresis magnetic multilayers metallic superlattices nickel alloys palladium perpendicular magnetic recording platinum remanence transmission electron microscopy Co Co/Pd multilayers

Co/Pt multilayers ITO ITO seed layers InSnO NiFe NiFe soft underlayers Pd Pt TEM coercivity exchange coupling high nucleation field hysteresis loops perpendicular magnetic recording media remanent squareness sheared sides spin-stand testing well-segregated columnar structures

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